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# Reconciling Patent Law and Traditional Knowledge: Strategies for Countries with Traditional Knowledge to Successfully Protect Their Knowledge From Abuse

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# RECONCILING PATENT LAW AND TRADITIONAL KNOWLEDGE: STRATEGIES FOR COUNTRIES WITH TRADITIONAL KNOWLEDGE TO SUCCESSFULLY PROTECT THEIR KNOWLEDGE FROM ABUSE

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*Traditional knowledge is a form of innovation that does not fit neatly into Western notions of property. Underdeveloped countries with significant traditional knowledge lack property protection for their traditional knowledge and are often not compensated for the technology arising from this form of knowledge. This Note outlines the tension arising from the differing incentives that underlie patent and traditional knowledge systems, and recommends methods of reconciling those tensions. First, this Note advocates that countries develop national libraries of the knowledge embodied in their staple agricultural products. Next, countries should create statutes to establish a method by which outside parties can negotiate to pay for traditional knowledge. Lastly, countries should use their permit or visa process to monitor and control the activities of foreigners commercializing traditional knowledge. The proposed measures in this Note help countries with significant biodiversity protect their traditional knowledge and allow fair compensation for commercial ventures stemming from that knowledge.*

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## I. INTRODUCTION

*If history has taught us anything, we need to be aware and involved in the protection and preservation of our traditional knowledge. It is not out of disrespect to those seeking our knowledge, but out of respect for our ancestors who protected our knowledge, left us the teachings and for our future generations who will need that knowledge to continue as sustainable people of this land.*[1]

1. Debby Danard, *Respecting Our Ancestors, Ensuring Our Future: Traditional Knowledge Primer for First Nations*, CHIEFS ONTARIO (Feb. 12, 2010), http://www.chiefs-of ontario.org/sites/default/files/files/TK%20Primer%20FINAL_0.pdf [perma.cc/25TY-XWUV].

Traditional knowledge includes, "[t]he vast majority of the world's biological diversity originates in the tropics and sub-tropics."[2] The genes from plants, animals, and microorganisms are the strategic raw products. But these genetic and commercial resources are no longer raw materials, "because they have been selected, nurtured, and improved by farmers and indigenous peoples over thousands of years."[3] These improvements to raw materials constitute a unique kind of knowledge, traditional knowledge. Yet the question remains, who should profit as a result of the developments from this source of knowledge?

Societies develop different ways of creating incentives for innovation. Currently, the patent system and traditional knowledge systems have conflicting interests. The two approaches have different incentives and reward systems. Patents guarantee a time-limited monopoly to a specific inventor providing an incentive for individuals to create and invent, which in turn benefits a society as a whole.[4] In contrast, traditional knowledge is shared knowledge within tribal communities that is improved over the course of generations.[5] Examples of traditional knowledge include medicinal material, rituals, agricultural practices, artistic endeavors, and spiritual expressions.[6]

What further complicates this problem is that there is no established global consensus over fundamental issues like who owns traditional knowledge.[7] The Nagoya Protocol, entered on October 2014, addresses traditional knowledge associated with genetic resources and includes provisions on access, benefit-sharing and compliance.[8] However, The Nagoya Protocol's success will require

2. Kimberly Wilson, *Indigenous People Challenge Private Ownership and Patenting of Life,* PROJECT CENSORED (April 30, 2010), *available at* http://www.projectcensored.org/18-indigenous-people-challenge-private-ownership-and-patenting-of-life/ [perma.cc/D8H2-VA8T].

3. *Id.*

4. INTELLECTUAL PROPERTY RIGHTS IN AGRICULTURAL BIOTECHNOLOGY 8–9 (F.H. Erbish & K.M. Maredia eds., 2004).

5. Marcia DeGeer, Note, *Biopiracy: The Appropriation of Indigenous Peoples' Cultural Knowledge*, 9 NEW ENG. J. INT'L & COMP. L. 179, 184 (2002).

6. INTELLECTUAL PROPERTY RIGHTS IN AGRICULTURAL BIOTECHNOLOGY, *supra* note 4, at 15.

7. Lorna Dwyer, *Biopiracy, Trade, and Sustainable Development,* 19 COLO. J. INT'L ENVTL. L. & POL'Y 219, 220 (2008).

8. *About the Nagoya Protocol*, CONVENTION ON BIOLOGICAL DIVERSITY, *available at* https://www.cbd.int/abs/about/ [PERMA.CC/NL35-MFP5] (discussing The Nagoya Protocol is a supplementary agreement to the Convention on Biological Diversity that "provides a transparent legal framework for the effective implementation of . . . the fair and equitable sharing of benefits arising out of the utilization of genetic resources.").

strong implementation at the domestic level,[9] which is the focus of this Note.

Traditional knowledge abuse has occurred for centuries. Researchers have documented several incidents of abuse where an outside entity, like a private company or researcher, disrespected customary rules of a local community or did not pay adequate remuneration in exchange for using a community's traditional knowledge for commercial efforts.[10] Brazil serves as a historical example from the mid–1800s when natural rubber was produced primarily from wild trees in Brazil.[11] To overcome the Brazilian monopoly, the British Royal Botanical Gardens sent a botanist to Brazil to collect seeds so they could later establish rubber plantations outside Brazil.[12] Recently, a range of patents have been granted that directly utilize (but do not acknowledge) traditional knowledge about plants, medicinal properties and methods of extraction.[13]

Still today, countries with significant traditional knowledge are victimized by similar instances of misuse and abuse. The core problem is that traditional knowledge is a form of innovation that up to now has no property protection so that those who house and originally develop the knowledge are not rewarded, and might even be penalized for it. These countries lack ways of protecting their traditional knowledge thus getting the reward for what is eventually produced as a result of the knowledge.

This Note outlines two strategies for countries to protect their valuable traditional knowledge, based on the nature of the knowledge. Part II describes the clash of cultures resulting from the different systems protecting the generation of new knowledge. Part III presents the first strategy for countries to domestically protect their staple products from being commercialized through national publishing libraries. Part IV presents the second strategy for countries to further protect their non-staple products from commercial efforts without tribal consent. Part V identifies the current gaps in domestic

9. *Id.*

10. J. MICHAEL FINGER & PHILIP SCHULER, POOR PEOPLE'S KNOWLEDGE: PROMOTING INTELLECTUAL PROPERTY IN DEVELOPING COUNTRIES 193 (2004) (stating that these types of cases have been frequently referred to as "biopiracy").

11. John Tustin, Note, *Traditional Knowledge and Intellectual Property in Brazilian Biodiversity Law*, 14 TEX. INTELL. PROP L.J. 131, 133 (2006).

12. *Id.*

13. Jane Anderson, *Indigenous/Traditional Knowledge & Intellectual Property,* DUKE SCHOOL OF LAW- CENTER FOR THE STUDY OF THE PUBLIC DOMAIN 29 (2010), *available at* https://web.law.duke.edu/cspd/itkpaper [http://perma.cc/6ZXW-YQ2W].

enforcement of traditional knowledge protection. Part VI analyzes the possibility of bilateral cooperation treaties and explores further measures countries can apply domestically to discourage misuse and abuse of their traditional knowledge.

## II. TENSION BETWEEN TRADITIONAL KNOWLEDGE AND PATENT LAW'S INCENTIVES

Innovations drive societies forward. But societies develop different ways of creating incentives for innovation, and those incentive systems reflect the social values of the society.

Traditional knowledge is defined as "the know-how, skills and practice that are developed, sustained and passed on from generation to generation within a community, forming part of its cultural or spiritual identity."[14] Traditional knowledge is entirely community based and allows resulting benefits to be shared within the community.[15] The free dissemination of traditional knowledge within the community allows for mutual benefits without the need for individualized rewards.[16]

By contrast, patent law rewards the person who invents or discovers something for their work through a time-limited monopoly.[17] Patent law is grounded in rewarding the individual. An inventor is rewarded through their discovery with just enough incentive to prevent certain would-be copiers.[18] In the American patent system, a specific inventor must be named to the patentable invention.[19]

Patent law and traditional knowledge share the concept of a public domain, which is the dissemination of propriety information for the public good. But there is uncertainty as to how traditional knowledge and the outsiders who use this knowledge fit into the patent system. Patents function under a short, reward based system. The patent system is motivated, "to guarantee the disclosure to third parties of all relevant information concerning the invention as a quid

14. Traditional Knowledge and Intellectual Property – Background Brief, WORLD INT'L. PROP. ORGANIZATION, *available at* http://www.wipo.int/pressroom/en/briefs/tk_ip.html [http://perma.cc/MB9C-F6Y4].

15. DeGeer, *supra* note 5.

16. Gelvina Rodriquez Stevenson, *Trade Secrets: The Secret to Protecting Indigenous Ethnobiological (Medicinal) Knowledge*, 32 N.Y.U. J. INT'L L. & POL. 1119, 1140 (2000).

17. *See generally* DAVID A. BURGE, PATENT AND TRADEMARK TACTICS AND PRACTICE 27 (3rd ed. 1999).

18. Jeanne Fromer, *Expressive Incentives in Intellectual Property,* 98 VA. L. REV. 1 (2012).

19. Morse v. Porter, 155 USPQ 280, 283 (Bd. Pat. Inter. 1965).

pro quo for the grant of exclusive rights." [20] Unlike patents, traditional knowledge is not grounded in a short reward. Traditional knowledge is contained as a knowledge system passed and improved over generations. Examples of traditional knowledge include medicinal properties of the neem tree (Azadirachta indica), and Egyptian architecture for cities.[21]

Patent law is grounded in rewarding the individual. An inventor is rewarded through their discovery. Under U.S. case law, a patent must be named to an inventor who exercises control over the inventive process.[22] But traditional knowledge is never confined to a single person or a tribe. Rather, traditional knowledge is central to a community's cultural value system, and the community generally holds and owns the knowledge collectively.[23]

Thus, patent law does not provide an ideal legal framework to protect traditional knowledge, because it is finite in nature and opens knowledge to the general public after a short amount of time.[24] The central problem is that traditional knowledge is a form of innovation that has no property protection, because the indigenous people who originally develop the knowledge are never rewarded for it.

As a result of this problem, countries with traditional knowledge are negatively affected in two ways. First, traditional knowledge lacks proper publication and documentation in Western or science mediums. When other communities and companies apply for patents on staple forms of traditional knowledge, there is a serious lack of prior art for the traditional knowledge to block the patenting of these staple products. Second, countries are not rewarded for hosting and promoting the value of traditional knowledge while others reap commercial benefits of the knowledge or a further variation of the knowledge.

This problem is further exacerbated because there is no global consensus over such fundamental issues as, who owns resources and what rights, if any, indigenous communities have when third-parties use their resources and traditional knowledge as ingredients to

20. Jay Erstling, *Using Patents to Protect Trade*, 15 TEX. WESLEYAN L. REV. 295, 298 (2009).

21. *What Is Indigenous Knowledge?*, THE WORLD BANK GROUP: REGIONS SUB-SAHARAN AFRICA, *available at* http://www.worldbank.org/afr/ik/basic.htm [http://perma.cc/E95C-RSRS].

22. *See Morse*, 155 USPQ at 283.

23. Daniel Gervais, *Traditional Knowledge and Intellectual Property: A TRIPS Compatible Approach,* 2005 MICH. ST. L. REV. 137, 140-141 (2005).

24. DeGeer, *supra* note 5, at. 181.

develop profitable technology.[25] The challenge is to find an incentive system that works for individual-reward systems, but allows community-driven innovation to coexist.

## III. JUSTIFICATIONS FOR WHY TRADITIONAL KNOWLEDGE SHOULD BE RESPECTED

Producers of traditional knowledge provide the world with abundant new and productive knowledge. The knowledge of indigenous people can be used in many applications and their contributions should be recognized. Indigenous people should be given property protection for their knowledge. Over time the incentive for these communities has changed from a shared goal of improving local quality of life, to a greater desire for individual, monetary compensation. It is equitable that indigenous people are adequately compensated in light of the community time and effort spent on preserving the traditional knowledge.

### *A. Social Incentive Has Changed With Monetary Compensation Available for Traditional Knowledge*

The global market is a highly competitive space and primarily rewards independent creation. Social incentives stemming from close-knit communities used to be sufficient to protect traditional knowledge. But now tribal youth have learned to admire stylish city-dwellers with fast cars, designer clothes, and spotlessly clean hands.[26] According to Helena Norberg-Hodge, indigenous youth are finding "their parents asking them to choose a way of life that involves working in the fields and getting their hands dirty for little or no money."[27] As wealth is transferred away from communities into global markets, the result is a destruction of communal values.[28]

Communities that have sustained themselves for hundreds of years are struggling to compete and survive in the global market. As a result, tribal communities, especially their younger members, have a greater desire for monetary compensation.[29] For example, the

25. Dwyer, *supra* note 7, at 239.

26. *Id.*

27. Helena Norberg-Hodge, *Localization: Small Scale on a Large Scale*, EXPRESSIONS 20 (2007) *available at* http://www.swaraj.org/shikshantar/Expressions2007.pdf [http://perma.cc/DE9X-T239].

28. *See* Helena Norberg-Hodge, *Consumer Monoculture: The Destruction of Tradition,* 1 GLOBAL DIALOGUE (1999) *available at* http://www.worlddialogue.org/print.php?id=22 [http://perma.cc/V2WX-3E2Q].

29. *Id.*

Indonesian Toradja society was once cashless and its people had no desire for money or goods that might be purchased with cash.[30] Eventually, Indonesians began cultivating coconut and coffee and then developed need for oil lamps, sewing machines, and "better" clothes.[31]

The once self-sufficient tribal economy was superseded by a desire for more than just basic communal products.[32] But such change in community incentive does not have to be a negative thing. Researchers, Raj Choudhury and Tarun Khanna, explain "[i]f an indigenous society has discovered medicinal uses of an herb, and if a Western firm can go in there and share the rents with the society, the patent might be a good thing."[33] In light of the deterioration of community-shared rewards stemming from traditional knowledge toward monetary compensation, it is important that indigenous people receive some form of protection for their knowledge.

### *B. Fairness - In Light of Community Time and Effort Spent on Preserving Traditional Knowledge*

Countries with traditional knowledge spend a considerable amount of time and effort housing and preserving this type of knowledge. It is only equitable that these countries be recognized for their work and also profit from commercial efforts stemming from the knowledge.

A country's right to protect their traditional knowledge is analogous to the American right of publicity. The right of publicity allows entertainers and other celebrities to charge for the commercial use of their names, likenesses, and distinctive performance styles.[34] The right of publicity is a common-law and statutory right that exists as a supplement to statutory copyright protection.[35] Melville Nimmer, one of the founding fathers of Copyright law encouraged the right of publicity because:

30. *Id.*

31. JOHN H. BODLEY, VICTIMS OF PROGRESS 153, 154 (6th ed. 2015).

32. Norberg-Hodge. *supra* note 28.

33. Carmen Nobel, *Bio-Piracy: When Western Firms Usurp Eastern Medicine,* HARVARD BUS. SCH. (Apr. 21 2014), *available at* http://hbswk.hbs.edu/item/7476.html [http://perma.cc/C5SC- NCRZ].

34. The right of publicity was defined in Haelan Laboratories, Inc. v. Topps Chewing Gum, Inc., 202 F.2d 866, 868 (2d Cir. 1953) ("A man has a right in the publicity value of his photograph, i.e., the right to grant the exclusive privilege of publishing his picture .... This right might be called a 'right of publicity.'").

35. For a description of publicity statutes, *see* Joseph J. Beard, *Casting Call at Forest Lawn: The Digital Resurrection of Deceased Entertainers-A 21st Century Challenge for Intellectual Property Law*, 8 Berkeley Tech. L.J. 101, 147-150 (1993).

> [I]t would seem to be a first principle of Anglo-American jurisprudence, an axiom of the most fundamental nature, that every person is entitled to the fruit of his labors. . . . Yet, because of the inadequacy of traditional legal theories . . . persons who have long and laboriously nurtured the fruit of publicity values may be deprived of them, unless judicial recognition is given to what is here referred.[36]

Through the publicity principle, Nimmer is justifying that every human being should be given control over the commercial use of his or her identity because, "nothing is as strongly understood as the notion that my identity is *mine* – it is my property, to control as I see fit."[37] Analogous to Nimmer's reasoning is the idea that countries with traditional knowledge are entitled to the fruits of their labors.

Traditional knowledge, like publicity, stems from the identity and property of many countries. Outside parties are only able to experiment and commercialize traditional knowledge because host countries have taken proactive, nurturing efforts to preserve the knowledge. These countries should not be deprived of adequate compensation and control over the traditional knowledge that they have housed and preserved over centuries.

## IV. STRATEGY ONE: PROTECTION OF STAPLE TRADITIONAL KNOWLEDGE THROUGH NATIONAL LIBRARIES

Staple products are raw materials that are needed every day for consumption and can be generally obtained.[38] However, outside entities may try to patent these staple products.

For example, the world has over 50,000 edible staples.[39] Just three grains: rice, maize and wheat, provide sixty percent of the world's food energy intake.[40] Specifically, basmati rice is a staple product comprising the main source of carbohydrates for many Indians and Pakistanis.[41] In 1997, American company RiceTec Inc. was granted a

36. Melville B. Nimmer, *The Right of Publicity*, 19 LAW & CONTEMP. PROBS. 203, 216 (1954).

37. J. Thomas McCarthy, *Melville B. Nimmer and The Right of Publicity: A Tribute*, 34 UCLA L. Rev. 1703, 1711 (1987).

38. *See* Nestec SA & Ors v. Dualit Ltd. Prs, [2013] EWHC 923, (Pat) (U.K.).

39. *Staple foods: What do people eat?*, U.N. FOOD AND AGRIC. ORGANIZATION *available at* http://www.fao.org/docrep/u8480e/u8480e07.htm [http://perma.cc/9RTA-EXKR].

40. *Id.*

41. *See* V. P. SINGH, AROMATIC RICES 137 (V.P. Singh et al. eds., 2000).

patent by the United States patent office for the same aromatic rice grown in India and used as a staple.[42] India objected to this patent since Basmati rice has been traditionally grown and used in India and Pakistan for centuries.[43] Due to India's strong opposition and protest to this patent, the company subsequently withdrew the majority of their patent claims.[44] American patent law requires that the invention be novel before protection can be applied.[45] The requirement of novelty, as defined by U.S. patent law, is that one may not patent an invention if the invention is any of the following:

> a. …known or used by others in this country, or patented or described in a printed publication in this or a foreign country, or
>
> b. …described in a printed publication in this or a foreign country or in public use or on sale in this country, or
>
> c. he has abandoned the invention, or
>
> d. the invention was first patented or caused to be patented…by the applicant…in a foreign country prior to the date of the application in this country….[46]

Patent examiners will reject an application for lack of novelty if there is prior art available on the same material.[47] Prior art is anything "made available to the public anywhere in the world by means of written disclosure and which can be of assistance in determining whether the claimed invention is novel and involves an inventive step."[48]

For indigenous communities, staple products have been known or used daily for centuries. The problem is that *s*taple products are so commonly used that they are most likely not published in literature

42. Utsav Mukherjee, *A Study of the Basmati Case (India-US Basmati Rice Dispute): The Geographical Indication Perspective*, NAT'L L. U. JODHPUR 1 (2008), *available at* http://ssrn.com/abstract=1143209 [http://perma.cc/KSG8-CBZU].

43. *Id.*

44. Saritha Rai, *India-U.S. Fight on Basmati Rice Is Mostly Settled,* N.Y. TIMES (Aug. 25, 2001), http://www.nytimes.com/2001/08/25/business/india-us-fight-on-basmati-rice-is-mostly-settled.html [https://perma.cc/HVY2-LSQV].

45. DeGeer, *supra* note 5, at. 183.

46. 35 U.S.C. § 102 (1994).

47. *See generally* 37 C.F.R. 1.104.

48. *PCT Glossary*, WIPO, *available at* http://www.wipo.int/pct/en/texts/glossary.html#P [perma.cc/QM4D-85JV] (last visited Mar. 14, 2015).

to comprise prior art. When presented with patents for staple products, examiners at foreign officers do not generally have published prior art available for comparison to aide in immediately rejecting applications for staple products.

When patents are granted for staple products without taking into account prior art, the country with traditional knowledge can be hurt tremendously. First, a patent grant can be so strong that the patentee can forbid all future use of the staple without authorization.[49] Because the patentee now has a grant to exclusively use and market the staple product, the patent always has the possibility to block local production. Second, if the staple becomes successfully commercialized, local prices may significantly increase such that local residents may be discouraged from using the staples due to their suddenly inflated price.[50]

If a country desires to protect their staples from being patented, the best method is to create a domestic registration library acknowledging these staples. Using this digital library, patent examiners can efficiently identify staples and deny patent applications for listed items.

After the basmati rice incident, India decided to be proactive. In 2001, the Indian government began to create a massive electronic library called the Traditional Knowledge Digital Library (TKDL) to compile herbal prior art.[51] By 2005, the TKDL spanned, "more than thirty-four million pages of Indian literature, including herbal formulations from the Unani, Yoga, Ayurveda, and Siddha medical systems."[52] Century-old texts were first classified into thousands of subgroups and then translated from multiple Indian languages into English, German, Japanese, French, and Spanish.[53]

Researchers, Choudhury and Khanna, aimed to find out whether anything about patent applications changed after the creation of the TKDL.[54] The TKDL was designed to assist patent examiners of major

49. Richard Stallman, *Biopiracy or Bioprivateering?*, STALLMAN PERSONAL BLOG (2001), *available at* https://stallman.org/articles/biopiracy.html [https://perma.cc/YP5K-8H3H].

50. Deborah James, *Food Security, Farming, and the WTO and CAFTA*, GLOBAL EXCHANGE, *available at* http://www.globalexchange.org/resources/wto/agriculture [http://perma.cc/55RL-MUYN].

51. Nobel, *supra* note 33.

52. *Id.*

53. *Id.*

54. *Id.*(beginning their research by searching through every patent filed by the US Patent and Trademark Office and the European Patent Office between 1977 and 2010).

intellectual property offices in carrying out prior art searches.[55] What's unique about the TKDL is that it bridges the linguistic gap between regional languages and those used by patent examiners at major IP offices.[56] The TKDL is based on 148 books of prior art relating to Indian systems of medicine, available at a cost of around $1,000 USD.[57] Translators, anthropologists, and IT specialists were all needed to create the database.[58]

Before the existence of a database like the TKDL, India's process of revoking a patent was a costly and time-consuming affair.[59] But after the TKDL's creation, there were minimal, direct costs to maintaining the library and having foreign patent examiners browse the library when granting patents.[60] Over just two years, India successfully prompted the cancellation or withdrawal of thirty-six applications related to patents pertaining to medicinal formulations.[61]

The TKDL has effectively served as a defensive mechanism for India to protect staple products from being granted patents by foreign patent offices.[62] Many countries with traditional knowledge are facing similar issues as India. The threat of having patents granted for staple products can directly affect an indigenous community's access to a food source.

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55. *Protecting India's Traditional Knowledge*, WIPO MAG., June 2011, at 5, http://www.wipo.int/export/sites/www/wipo_magazine/en/pdf/2011/wipo_pub_121_2011_03.pdf [http://perma.cc/VXU6-2QAK].

56. *Id.*

57. *Id.* at 6.

58. *Id.*

59. *Id.* (stating it took India, "on average, five to seven years and costs between 0.2-0.6 million US dollars to oppose a patent granted by a patent office.").

60. GOV'T. OF INDIA COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, REPORT ON INT'L CONF. ON UTILIZATION OF THE TRADITIONAL KNOWLEDGE DIG. LIBRARY AS A MODEL FOR PROT. OF TRADITIONAL KNOWLEDGE 31 (2011), http://www.tkdl.res.in/TKDL/Conference/pdf_files/Report_of_Conference.pdf [http://perma.cc/RA67-UQMC] (stating that India's TKDL allows cancellation or withdrawal of wrong patent applications concerning India's traditional knowledge at zero cost and in few weeks' time, which before it took close to ten years to get patent invalidated for staple products).

61. *Id.* at 33-36.

62. Anil K. Gupta, *The Conundrum of Creativity: Compensation and Conservation in India: How Can Intellectual Property Rights Help Grass-roots Innovators and Traditional Knowledge Holders?*, *in* BIODIVERSITY AND THE LAW: INTELLECTUAL PROPERTY, BIOTECHNOLOGY &TRADITIONAL KNOWLEDGE 327, 340 (Charles R. McManis ed., 2009).

For example, most Westerners know quinoa as the latest superfood stocked in high-end grocery stores.[63] But, quinoa is a grain-like seed that has been the staple grain in many parts of South America including Ecuador, Bolivia, and Peru.[64] After Bolivian farmers shared the seeds of their quinoa crop with two Colorado State University researchers, the American scientists acquired a U.S. patent on the plant.[65]

Quinoa has been native to the Andean mountains of Bolivia, Argentina, and Peru, and has been cultivated by indigenous tribes since about 3,000 B.C.[66] After the American researchers received a patent for quinoa, there was a global outcry against the patent, including a plea made at a special session of the U.N. General Assembly.[67] In light of the criticism, the Colorado researchers did not enforce the patent. When learning of the victory, Bolivian activist Jaime Bravo declared, "sometimes truth has a good day. This is such a relief. Quinoa is the meat of the Andes and it was almost stolen from us."[68]

However, Bolivia could have entirely dodged this problem by creating a similar TKDL as India to protect quinoa from unfair patenting. A database including explicit publication about quinoa would significantly deter any foreign patent examiner from granting a patent for such an important, often-used grain. While creating a database does require time and money, the benefits of having published documentation for staples outweighs the costs. Staples directly affect the livelihood and consumption of a country's population. If a country desires to protect their staples from being patented, the best method is to follow the example of India and create a domestic registration library documenting these staples. While these libraries do present a few challenges – like access to funding and prior

63. Lisa M. Hamilton, *The Quinoa Quarrel*, FOOD & ENV'T NETWORK (Oct. 14, 2014), *available at* http://thefern.org/2014/10/quinoa-quarrel/ [http://perma.cc/89V4-BD7S].

64. *Id.*

65. *See* Press Release, Edward Hammond, Bolivian Farmers Demand Researchers Drop Patent on Andean Food (June 18, 1997), *available at* http://library.wustl.edu/~listmgr/Jun1997/0136.html [http://perma.cc/TZ3T-UT6F] (identifying the prohibitive effect of a U.S. patent held on the biological resources of the Aymara and Quechua people of the Andes Mountains).

66. Hamilton, *supra* note 63.

67. *Quinoa Patent Dropped: Andean Farmers Defeat U.S. University*, RURAL ADVANCEMENT FOUNDATION INTERNATIONAL (Aug. 24, 1998), http://www.etcgroup.org/sites/www.etcgroup.org/files/publication/411/01/rafigenoquinoa98.pdf [http://perma.cc/QD62-FMKU].

68. *Id.*

art's inability to block products that are slight improvements on staple products – overall they are an efficient way to block applications drafted for staple products.

## V. STRATEGY TWO: COMMERCIALIZING NON-STAPLE TRADITIONAL KNOWLEDGE USING A CODIFIED STATUTE

Traditional knowledge also comes in a non-staple form, meaning it is not used daily by indigenous people but developed over decades. This type of knowledge has a wide range of commercial and non-commercial uses.[69] For example, communities may have been using an herb to treat heartburn for centuries. Outside researchers could commercialize this herb into a capsule form with some added vitamins to introduce to drugstore shelves.

Researchers routinely use non-staple traditional knowledge to better understand biodiversity and the intricate nature of life-forms.[70] In many cases, the same properties that make traditional knowledge useful to their hosting indigenous community have been used by industries to develop popular products without any compensation. Countries with significant traditional knowledge have to take proactive, domestic measures to make sure their knowledge is used with informed consent and valued appropriately by those who use the knowledge. Such countries need to have a strict, domestic protocol in place to receive equitable benefits arising from their traditional knowledge.[71]

Peru, one of the countries with the most traditional knowledge, is also the only country in the world that has a law against the abuse of traditional knowledge.[72] Peru's efforts to protect indigenous tribal rights to traditional knowledge were codified in 2002 as Law No. 28216 titled "The Protection of Access to Peruvian Biological Diversity and the Collective Knowledge of Indigenous People."[73] Peru is now the leader in protecting traditional knowledge.

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69. CONVENTION ON BIOLOGICAL DIVERSITY: ABS, THEME: TRADITIONAL KNOWLEDGE 2 (2011), http://www.cbd.int/abs/infokit/revised/web/factsheet-tk-en.pdf [http://perma.cc/4ZCK-UAG7].

70. *Id.*

71. *See id.*at 3.

72. WIPO INTERGOVERNMENTAL COMM. INTELLECTUAL PROP. & GENETIC RES., *Traditional Knowledge and Folklore*, at Annex, pg.1,WIPO GRTKFC/IC/8/12, 8th Sess., (June 6-10, 2005), *available at* http://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_8/wipo_grtkf_ic_8_12.pdf [http://perma.cc/V8TP-3Y4N].

73. Law No. 27811, Aug. 10, 2002, El Peruano (Peru), http://www.wipo.int/edocs/lexdocs/laws/en/pe/pe011en.pdf [http://perma.cc/425C-MJTW] [hereinafter Peruvian law].

The Peruvian Regional Director for Latin America of the World Intellectual Property Organization, Carlos Mazal, believes this Peruvian law functions well to preserve traditional knowledge and to create and protect tribal rights.[74] The Peruvian law includes three important components that other countries with traditional knowledge should also codify as a way to protect their non-staple products. The protection components include: (1) an explicit statement for the indefeasibility of indigenous rights; (2) appointed tribal representative to communicate with outside parties; and (3) established negotiated percentage of gross sales from commercial efforts.

### *A. Explicit Statement Concerning the Indefeasibility of Indigenous Rights and Future Use of the Traditional Knowledge*

Traditional knowledge, unlike patents, forms the cultural heritage of tribal communities and must be protected for use by future tribal generations. The Peruvian law explicitly states the future rights of indigenous people.

Article 1 of the law states: "[t]he Peruvian State recognizes the rights and power of indigenous peoples and communities to dispose of their collective knowledge as they see fit."[75] Next, Article 12 declares that regardless of commercial ventures, the rights of indigenous peoples in their collective knowledge shall be inalienable and indefeasible.[76] In addition, Article 32 states that the present generations of the indigenous peoples shall preserve develop and administer their collective knowledge for the benefit of future generations as well as for their own benefit regardless on any licensing deals.[77]

Locals should never be prevented from using traditional knowledge in its pure form. When big multi-national corporations and pharmaceutical companies come in and try to negotiate with tribal representatives, they have the greater bargaining power. An *explicit statement* affirming that the indigenous rights are indefeasible, like the Peruvian law, is important because it protects tribes from signing away their rights during negotiations. Further, such an explicit statement recognizes the value of traditional knowledge as a community right that is shared freely and passed to future generations.

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74. Shawn Sullivan, *Peru Is Leader In Fight Against Biopiracy, Says WIPO Regional Director,* SULLIVANLAW.NET (2012), *available at* http://sullivanlaw.net/peru-is-leader-fight-against-biopiracy-says-wipo-regional-director/ [http://perma.cc/J4D6-WEF2].

75. Peruvian Law, *supra* note 73.

76. *Id.* at art. 12.

77. *Id.* at art. 32.

### *B. Tribal Representative to Voice Concerns and Communicate With Outside Party*

The best way to account for the various tribes is to have an assigned representative. Article 14 of the Peruvian law states that a tribal representative will represent the interest of each indigenous community.[78] The assigned representative essentially becomes the voice of the tribe and their traditional knowledge rights.[79]

In Peru, when outside parties are interested in having access to collective knowledge for any purpose (scientific, commercial, industrial, etc.), the party must follow Article 6 and apply for the prior informed consent of the representative of the tribe possessing the traditional knowledge.[80] Article 6 further states that when an outside party contacts a representative about utilizing traditional knowledge, they should inform the greatest possible number of indigenous people possessing the knowledge about the negotiations.[81]

The tribal representative is able to engage in negotiations and take into account the concerns of the tribe, especially those values connected to religious or tribal spirituality.[82] A tribal representative's active involvement with both the indigenous people and interested outside parties is an effective method other countries should consider adopting.

### *C. Negotiated Percentage of Gross Sales from Commercial Efforts Returned Directly to Tribes or Indigenous Funds*

Given how relatively new the Peruvian law is there are few examples of successful licensing efforts. However, Peru's codified law serves as an effective model for countries in the same predicament and gives outside parties an idea of what minimum amount to start negotiations when contracting traditional knowledge for commercial purposes. Peruvian law requires that a base percentage of gross sales stemming from traditional knowledge will be returned back to the tribal communities.[83] This requirement serves as the foundation for negotiations regarding future licensing deals.

Based on the Peruvian law, a tribal representative is able to request a negotiating percentage to be paid by the outside party from the total proceeds resulting from that commercial venture of the traditional knowledge.[84] Article 8 of the Peruvian law states that in

78. *Id.* at art. 14.

79. *Id.*

80. Peruvian Law, *supra* note 73, at art. 6.

81. *Id.*

82. *Id.*

83. *Id.* at art. 8.

84. *Id.*

the event the tribe members cannot be ascertained, a percentage which shall not be less than ten percent of the value, before tax, of the gross sales resulting from the marketing of goods developed on the basis of traditional knowledge shall, be set aside for a Fund of the Development of Indigenous Peoples.[85]

However, the ten percent of gross sales stated in the Peruvian law will not be a ceiling limit that tribes can earn back from commercial ventures. Article 8 goes on to state that, "the parties may agree on a greater percentage according to the degree of direct use or incorporation of the said knowledge in the resulting end product and the degree to which the said knowledge contributed to the reduction of the cost of research and development work on derived products."[86]

A complete win-win example is when an indigenous region already realizes the worth of their traditional knowledge and both an outside party and local stakeholders share the rent appropriated from commercializing the knowledge.[87] There are two examples, albeit from outside Peru, demonstrating that tribal representatives have in fact been able to successfully negotiate licensing deals.[88]

*Example 1:* Local tribes in Kerala, India are a unique example of an indigenous power able to leverage and start the negotiation process to commercialize their traditional knowledge. Local Kerala researchers uncovered a Kaani plant that provides a jolt of organic energy.[89] The plant knowledge was transferred to a private firm for an appropriately negotiated license fee for a seven-year period.[90] A royalty was also negotiated at the rate of two percent of the ex-factory sale price of the commercialization sale for a ten-year period.[91] The first licensing fee payment was for Rupees five lakh (about 14,000 USD) and over

85. *Id.*

86. Peruvian Law, *supra* note 73, at art. 8.

87. Prithwiraj Choudhury & Tarun Khanna, *Bio-Piracy or Prospering Together? Fuzzy Set and Qualitative Analysis of Herbal Patenting by Firms* 3 (Harvard Bus. Sch., Working Paper No. 14-081, 2014).

88. *Id.* at 4-5.

89. C.R. Bijoy, *Access and Benefit Sharing From the Indigenous Peoples' Perspective: The TBGRI-Kani 'Model'*, 3 L. & ENV'T DEV. J. 1, 3 (2007), http://www.lead-journal.org/content/07001.pdf [perma.cc/2UGZ-A8ZX].

90. *Id.* at 4.

91. *Id.* (citing in n. 8 that The Agreement for Licensing of Know-how signed between Tropical Botanic Garden & Research Institute and The Arya Vaidya Pharmacy (Coimbatore) Ltd., 10 November 1995 is available at http://www.wipo.int/tk/en/databases/contracts/texts/html/tbgri.html) .

time the revenue was distributed to the forty tribal settlements dispersed in the area.[92]

*Example 2:* The San Bushmen of the Kalahari received royalties for the patented use of *Hoodia*, a plant that the Bushmen have used as an appetite suppressant for centuries.[93] The South African San Council and the country's Scientific and Industrial Research Council (CSIR) signed a deal that identified the appetite-suppressing ingredient in *Hoodia* during research into indigenous plants in 1996.[94]

Based on the deal, the CSIR agreed to pay the San eight percent of payments made by its licensee, UK-based Phytopharm, during the drug's clinical development over the next few years.[95] This could result in more than a million dollars of revenue for the San Bushmen.[96] It is expected that larger amounts of money may flow from the agreement at a later stage[97] as international drug giant Pfizer has shown an interest in marketing the drug.[98] For the impoverished people of the San this could finally be a stable cash flow, given the huge international demand for obesity drugs.[99]

The local tribes in Kerala and the Kalahari illustrate that equitable licensing negotiations can occur between indigenous communities and outside parties for traditional knowledge. However, tribal representatives generally lack training and Western negotiating skills. Countries with traditional knowledge should consider setting a baseline limit for licensing negotiations, similar to Peru, to confirm indigenous communities are adequately compensated.

## VI. CURRENT GAPS IN DOMESTIC ENFORCEMENT

According to Article 42 of the Peruvian law, "[t]he indigenous town that possesses traditional knowledge will be protected against: revelation, acquisition, or use of said traditional knowledge without

92. R.V. Anuradha, *SHARING WITH THE KANIS-A case study from Kerala, India,* MONTREAL: SECRETARIAT OF THE CONV. ON BIOLOGICAL DIVERSITY, 6 (1998), https://www.cbd.int/financial/bensharing/india-kanis.pdf [https://perma.cc/B3QA-JFRN].

93. CONVENTION ON BIOLOGICAL DIVERSITY: ABS, *supra* note 69, at 4.

94. Leon Marshall, *Africa's Bushmen May Get Rich from Diet-Drug Secret,* NAT'L GEOGRAPHIC (Apr. 16, 2003), *available at* http://news.nationalgeographic.com/news/2003/04/0416_030416_san1.html [http://perma.cc/E8YJ-BWPW].

95. *Id.*

96. *Id.*

97. CONVENTION ON BIOLOGICAL DIVERSITY: ABS, *supra* note 69, at 4.

98. Marshall, *supra* note 94.

99. *Id.*

their consent.[100] The Peruvian law includes sanctions and means of enforcement for those who disobey the law.[101] For example, article 62 of the Peruvian law states that "[v]iolations to the rights of the indigenous people owning traditional knowledge will lead to a fine penalty, without prejudice to the measures set forth for the cessation of the infringement or to prevent it from taking place."[102]

Peru has considerable enforcement laws codified in their domestic laws,[103] but the country has trouble effectively using sanctions against parties located outside their country.[104] Peru faces a lack of trans-boundary cooperation with other nations to agree to their domestic laws. The Peruvian government wishes to establish an international global mechanism or cooperation among member States of the World Trade Organization (WTO) to avoid traditional knowledge abuse.[105]

However, the WTO's Trade Related Aspects of Intellectual Property Rights Agreement (TRIPS) has not been a source of encouragement for Peru's objective. Before TRIPS, many countries did not allow the patenting of life forms, and plant-growth regulators.[106] This all changed after TRIPS was ratified.[107] Article 27.1 of TRIPS states "patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application."[108]

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100. Arana Courrejolles & María del Carmen, *The Relevance of Traditional Knowledge to Intellectual Property Law,* INT'L ASS'N PROTECTION INTELL. PROP. 4 (2012), https://www.aippi.org/download/commitees/232/GR232peru.pdf [http://perma.cc/Y7TR-XXN6].

101. *Id.*

102. *Id.* at 4-5 (stating that "the imposition and classification of fines will be calculated by weighing: a) The economic benefit obtained by the transgressor; b) The economic damage caused to the indigenous people and communities and c) The conduct of the transgressor throughout the proceedings.").

103. *Id.* at 5 (stating in Article 120 A of Legislative Decree 1075 of Industrial Property that states the failure of the applicant for a patent to follow outlined tribal consents procedures may result in a fine of up to 1,000 ITU).

104. *Id.* at 9.

105. Arana Courrejolles & María del Carmen, *supra* note 100, at 9.

106. Jason MacLeod, *The Geographies of Race, Patents, and Traditional Knowledge,* JASON MACLEOD THEORIST (2012), *available at* http://www.jasondmacleod.com/the-geographies-of-race-patents-and-traditional-knowledge/ [http://perma.cc/2ENP-DCQ9].

107. *Id.*

108. Agreement on Trade-Related Aspects of Intellectual Property Rights art. 27, Apr. 15, 1994, 33 I.L.M 81 (1994) *available at*

There are several significant limitations in the TRIPS agreement. First, patent holders are able to exclude others from making or selling plants and next, there is no provision requiring prior informed consent from governments or communities before using traditional knowledge. In addition, the agreement lacks any discussion on how patent holders can share benefits with the country or communities that are the source of diversity.[109] There is no substantive provision within TRIPS to protect biodiversity. On the contrary—TRIPS implies that nothing should impede free trade.[110]

## VII. BETTER ENFORCEMENT MEASURES FOR COUNTRIES TO PROTECT THEIR TRADITIONAL KNOWLEDGE

Today, countries with traditional knowledge lack concrete tools to enforce their domestic measures outside their boundaries. But these countries may consider using their domestic measures as a way to leverage support and cooperation with Western powers through potential bilateral agreements. Internally, these countries may also consider adding provisions to their national permit or visa systems. These provisions would allow countries to obtain jurisdiction over foreigners who have taken traditional knowledge without indigenous consent or enforce judgements against those who abuse traditional knowledge outside the country.

### *A. Possibility of Bilateral Cooperation Treaties*

While the Peruvian law includes a variety of enforcement measures, it severely lacks Western cooperation. But Carlos Mazal,[111] believes the existence of the Peruvian law enabled Peru to strategically negotiate in 2006 a Free Trade Agreement with the United States titled "Understanding regarding Biodiversity and Traditional Knowledge."[112] The "Understanding" states that both Peru and the United States recognize the importance of:

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https://www.wto.org/english/tratop_e/trips_e/t_agm3_e.htm [http://perma.cc/PQZ7-PAUZ] [hereinafter TRIPS].

109. MacLeod, *supra* note 106.

110. Prithwiraj Choudhury, *Knowledge Creation in Multinationals and Return Migration: Evidence from Micro Data,* ACAD. MANAGE PROC. 96 (2010), http://proceedings.aom.org/content/2010/1/1.256.full.pdf.

111. Since 2002, Mazal has served as the Peruvian Regional Director for Latin America of the World Intellectual Property Organization Carlos Mazal, VANRELL PROPIEDAD INTEL., *available at* http://www.vanrell.com.uy/en/users/carlos-mazal [http://perma.cc/F4EM-6M52] (last visited Nov. 14, 2015).

112. Sullivan, *supra* note 74.

> (1) obtaining informed consent from the appropriate authority prior to accessing traditional knowledge;
>
> (2) equitably sharing the benefits arising from the use of traditional knowledge; and
>
> (3) promoting quality patent examination to ensure the conditions of patentability are satisfied.[113]

It is important to note that the Understanding only commits the United States to check publicly accessible databases that contain relevant information about Peruvian traditional knowledge. The Understanding allows the Peruvian government an opportunity to cite, in writing, to the appropriate examining authority, prior art that may have a bearing on patentability.[114] Therefore, what the United States is agreeing to is to recognize published information of traditional knowledge, which is discussed in Part IV of this Note.

However, the United States has not gone so far as to commit itself to abiding by the Peruvian law measures outlined in Part V of this Note. The United States, as part of the Understanding, did not broadly commit to enforcement of Peru's traditional knowledge property regime and the codified Peruvian law.[115] The lack of this broad agreement in the Understanding indicates the difficulty of securing international cooperation for enforcement through bilateral treaties.

Nevertheless, this Understanding is significant because it marks the first time a Western power has acknowledged the existence of traditional knowledge. Codified domestic enforcements, as forceful as they may be, will not be deferred to without Western support. Similar bilateral cooperation treaties modeled after the Understanding may encourage Western countries to begin to consider the worth of traditional knowledge.

### *B. Proposed Future Measures for Countries to Better Enforce Their Domestic Strategies*

Given the hardships associated with receiving Western support, countries with traditional knowledge need to enact stronger domestic methods for enforcement. For example, in 1994, a Colorado based seed company purchased yellow bean seeds in Sonora Mexico. Two

113. Understanding Regarding Biodiversity and Traditional Knowledge, U.S.-Peru, Apr. 12, 2006, *available at* https://ustr.gov/sites/default/files/uploads/agreements/fta/peru/asset_upload_file719_9535.pdf [http://perma.cc/272D-7TWC] (last visited Apr. 12, 2016).

114. *Id.*

115. *Id.*

years later, the private company, filed for and won an exclusive patent (US #5984079) for the bean seed dubbed Enola in the United States.[116] Following the patent grant, Mexico lacked measures to obtain jurisdiction over the company president who had smuggled the bean seeds outside Mexico or even a way to discipline the president.[117]

Tailored domestic enforcement measures can efficiently protect traditional knowledge from being abusively exported. Countries like Mexico, with significant traditional knowledge, should use their visa process as a way to impose civil and/or criminal penalties when traditional knowledge is taken outside the country without permission.[118] National measures, like the Peruvian law, could be strengthened by the use of permits, contractual obligations, visa systems and civil or criminal penalties for non-compliance of domestic laws.[119] The proposed national-based approaches through modifications of a country's permit system could be effective ways to gain prior informed consent for fair and equitable benefit sharing of traditional knowledge.[120]

Under the proposed national permit or visa system, an individual applying for a visa must consent to refrain from taking traditional knowledge without informed consent. Then, the country will have evidence of prior informed consent in the form of a visa or signed national permit in the event that there is later abuse of traditional knowledge, as in the Mexico bean seed example. If the foreigner inappropriately takes traditional knowledge, then the visa provision will subject the foreigner to sanctions based on domestic measures.

If an international agreement through the WTO or WIPO is ratified that recognizes the full protection of countries with traditional knowledge, the cost of enforcement will significantly decrease. The Nagoya Protocol is the most recent and ambitious approach to

116. GLOBAL EXCHANGE, BIOPIRACY- A NEW THREAT TO INDIGENOUS RIGHTS AND CULTURE IN MEXICO 5 (April 2011).

117. Dennis Crouch, *Mexican Yellow Bean Patent Finally Cooked*, PATENTLYO (Feb. 2001), *available at* http://patentlyo.com/patent/2009/07/mexican-yellow-bean-patent-finally-cooked.html [http://perma.cc/7EJ5-8PX4].

118. Comm. From the United States: Relationship Between the Trips Agreement and the CBD, Nov. 24, 2004, IP/C/W/434 (Nov. 26, 2004) [hereinafter Comm. From the United States], *available at* https://docsonline.wto.org/dol2fe/Pages/SS/DirectDoc.aspx?filename=t%3A%2Fip%2Fc%2Fw434.doc&.

119. United States, IP/C/M/42, para. 14, IP/C/M/39, para. 129, IP/C/M/38, para. 234.

120. EC, IP/C/W/383; United States, IP/C/W/434, IP/C/W/257, IP/C/M/48, para. 26, IP/C/M/42, para. 14, IP/C/M/40, para. 56, United States, IP/C/M/39, para. 20, IP/C/M/38, para. 234, IP/C/M/37/Add.1, para. 234, IP/C/M/36/Add.1, para. 231.

developing an international instrument to achieve these means.[121] However, actual utility of the Protocol will only become apparent during the implementation phase in the upcoming years.[122] A widely accepted and enforced international agreement protecting traditional knowledge could effectively allow instances of traditional knowledge abuse to be litigated in most tribunals. Also, judgments in favor of indigenous communities could be enforced around the world under international agreements significantly driving down the cost for countries with traditional knowledge.[123]

Even without such a tool, countries with traditional knowledge can still use a visa or permit system to their advantage by including choice of law provisions. Specifically, choice of law provisions could be used when indigenous communities enter licensing agreements with outside parties so that all parties are aware of the law that will apply before a dispute arises.[124] Using a visa or permit process is the best and most proactive measure countries with traditional knowledge can easily implement.

## VIII. CONCLUSION

The best way for countries to protect traditional knowledge from abuse is to take proactive measures. To protect staple products, countries should follow India's example and create a detailed electronic library designed to assist patent examiners of major intellectual property offices. Foreign examiners, carrying out prior art searches, can use these databases to immediately reject patent applications trying to claim a staple. Even if the foreign examiner approves a patent for a staple product, an electronic library allows for an easy, efficient way to bring about the cancellation or withdrawal of a staple patent.

If a country hopes to protect non-staple products from being inappropriately commercialized, they must create a domestic law modeled after Peru's model. The domestic law must explicitly state the indefeasibility of indigenous rights and a method for outside entities to negotiate with local tribes for traditional knowledge licensing transactions. Further, countries should add provisions in their national permit or visa system to serve as evidence of prior

121. Evanson Kamau et al., *The Nagoya Protocol on Access to Genetic Resources and Benefit Sharing: What is New and What are the Implications for Provider and User Countries and the Scientific Community?*, 6/3 LAW ENVIR. & DEV. J. 246, 262 (2010).

122. *Id.*

123. United States, IP/C/W/434, IP/C/W/257, IP/C/M/39, para. 130, IP/C/M/37/Add.1, ¶F, para. 1.

124. Comm. From the United States, *supra* note 118.

informed consent from outside parties in the event that there is a later abuse of traditional knowledge. As Carlos Mazal[125] best described;

> There is something that must be made clear. Peru's biodiversity must be protected and exploited in a responsible manner, because it could contain the cure for many illnesses, and this is not just about sharing it with the world, but also about receiving benefits. It may be true that there aren't sufficient funds to develop products, but there is an alternative in which the state could enter into a partnership with the private sector.[126]

Biodiversity is the foundation for human health and innovation.[127] Hidden in the biodiversity and traditional knowledge of many of these countries are the answers to cancer, super-foods, and sustainable products. Biodiversity loss can hurt the traditions and livelihoods of communities that utilize traditional knowledge for food and medicine, and curtail innovation.[128]

Because the process of commercializing traditional knowledge is so dependent on expensive private funding, it is easy to overlook indigenous people's rights and compensation. The challenge of this endeavor is to have a meeting of the minds between countries with traditional knowledge, the Western patent system, and the private commercial sector. The motives of patent law and traditional knowledge do not have to be incompatible. The aim is for a "win/win situation" where the patentee successfully improves the traditional knowledge through innovation *and* countries with traditional knowledge are fairly compensated for commercial ventures stemming from the knowledge.

125. Since 2002, Mazal has served as the Peruvian Regional Director for Latin America of the World Intellectual Property Organization, *supra* note 111.

126. Sullivan, *supra* note 74.

127. U.N CBD COP 10 Policy Brief, *The importance of biodiversity to human health (*Oct. 2010), http://www.cohabnet.org/news/documents/COP10policybrief1r.pdf [http://perma.cc/SR7H-7MSS].

128. *Id.*